REMARKS

The present amendment is submitted in response to the Office Action entered on April 24, 2007. Claims 1, 2, 6-11 and 33-44 are pending. Applicant notes with appreciation the indication of allowable subject matter with respect to claim 8 and the allowance of claims 10, 11 and 38-44.

Claims 1, 2, 7, and 33-37 were rejected under 35 U.S.C. §103(a) as being obvious in view of Suzuki I (U.S. Pat. No. 5,489,746) in combination with Suzuki II (U.S. Pat. No. 5,831,193) and McDowell (U.S. Pat. No. 6,931,370). Claims 6 and 9 were rejected as obvious in view of Suzuki I in combination with McDowell.

Independent claims 1, 6, 9 and 10 recite (i) "wherein a number of bits per sample is variable between the frames", (ii) "but [the number of bits per sample] is uniform within each of the frames", (iii) and that each frame is of the same size (more specifically, claims 1, 9 and 10 recite "each of the frames of the compressed waveform data is stored over a predetermined number j of successive addresses" and claim 6 recites "wherein each of the frames has a fixed total number of bits").

The features of Suzuki II the Examiner relied on are actually disclosed in Suzuki I. Therefore, Applicant's arguments center on the combination of Suzuki I and McDowell.

Suzuki I discloses an audio encoding mechanism which stores waveform data. According to Suzuki I, the number of bits per sample is variable for different frames. However, Suzuki I does not disclose that the frames are of the same size, as required by the claims. On the contrary, Suzuki I discloses frames of different sizes. Specifically, Suzuki I discloses frames that have the same number of samples but different number of bits per sample. Therefore, the frames have different sizes overall. For example, Fig. 2 shows three frames of different sizes wherein each frame includes 16 samples but the number of bits per sample of the different frames are different (i.e., 11 for Frame 0, 10 for Frame 1 and 12 for Frame 2).

The Examiner has sought to make up Suzuki I's deficiencies by citing McDowell. McDowell is completely inapplicable with Suzuki I. Applicant respectfully submits that the Examiner has failed to appreciate McDowell's inapplicability as discussed in the previous response. Applicant believes it is important to describe what McDowell discloses.

McDowell discloses encoding audio data according to a sub-band coding technique. A "sub-band" refers to a specific frequency (or a relatively narrow range of frequencies). An ordinary audio signal is usually represented by a waveform. The system of McDowell splits that waveform into multiple components each component being associated with a specific frequency (or sub-band). Thus, McDowell maps the original waveform data into multiple sets of sub-band data each set being associated with a respective sub-band.

The individual sub-band data is smaller in number of samples than the original waveform data. More specifically, each sub-band has an associated number of bits. The data associated with each sub-band is re-quantized in such a manner as to be limited to the number of bits associated with that sub-band. Some sub-bands have no bits associated with them, so data from these sub-bands is discarded. Data associated with all sub-bands that have bits allocated to them for a specific period of time is stored into a frame. Multiple frames are generated to define an audio signal of a longer period of time.

Thus, in general, McDowell discloses a system where a single waveform is split into multiple sub-bands of different frequencies and data defining the different sub-bands is stored separately, i.e., the waveform data is decomposed in the frequency domain. This is different from a system where an original waveform data is compressed sample by sample, i.e., in the time domain, as in Suzuki I.

McDowell discloses that each frame comprises fixed length codes (FLCs) (see, e.g., col. 3, line 34). This is achieved by fixing the bit allocation between frames (see, e.g., col. 3, lines 38-41; col. 7, lines 24-27; col. 8, lines 30-33, col. 10, lines 9-18). Thus, McDowell discloses that for a specific sub-band, the number of bits per sample for different frames is fixed.

Furthermore, McDowell discloses that the number of bits per sample is different for different sub-bands within a single frame as is usually the case for sub-band coding (see, e.g., col. 8, lines 15-18; col. 10, lines 15-18). Thus, for a single frame, the number of bits per sample differs for the different sub-bands within that frame.

The Examiner may maintain that the number of bits per sample within a frame is fixed if a frame of only one sub-band is considered. However, in that case, if the number of bits per sample of different frames varies (as recited by the claims), then the size of the frames will also vary, as McDowell requires that the number of samples of each sub-band be fixed. However, the claims recite frames of uniform size. Therefore, it is apparent that McDowell fails to disclose various elements of the claims.

With the above discussion, it is clear that Suzuki I cannot be combined with McDowell as the Examiner seeks to do. Suzuki I discloses compressing waveform data in the time domain, while McDowell discloses doing so in the frequency (or sub-band) domain. Thus, the actual data stored by the Suzuki I and McDowell are entirely different. More specifically, while Suzuki I stores samples defining the actual audio waveform being encoded, McDowell stores data defining a plurality of different waves of different frequency bands.

Furthermore, combining these two references is not even possible without undue experimentation. Because time domain and frequency domain encodings comprise entirely different data, directly combining time domain and frequency domain storage data formats would not be possible without completely corrupting the data. Thus, in order to apply a frequency domain storage format to time domain data one would need to convert the time domain data into the frequency domain and save the data in the frequency domain. However, such a data conversion is not contemplated by the present invention.

In the "Response to Arguments" section of the Office Action, the Examiner states that "the combination of Suzuki I with McDowell's teaching of storing in memory compressed data that is packed in a plurality of data frames of equal size reads on the claims." See Examiner's Action,

page 11. Applicant urges the Examiner to show exactly how the teachings of McDowell can be added to Suzuki I to make the frames of Suzuki I be of equal size while ensuring that different frames feature different bits per samples. As noted above, Suzuki I illustrates its format in Figure 2. There, three frames are shown. Frame 0 includes 16 samples, each having 11 bits per sample (for an overall compressed data size of 176 bits), frame 1 includes 16 samples of 10 bits each (for an overall size of 160 bits) and frame 2 includes 16 samples of 12 bits each (for an overall size of 192 bits).[1] Applicant respectfully requests the Examiner to show how these frames can be modified in accordance with the teachings of McDowell in order to make all frames have the same size. Applicant respectfully contends that McDowell teaches no such modification.

In contrast, the present invention provides that each frame is of the same size, although the number of bits per sample differs for each frame (see, e.g., Figs 8-11). Each frame stores compressed waveform data in the form of time domain samples. Thus, if the samples are read from the frame with read addresses varying at a first designated frequency, an audio tone corresponding to that frequency can be generated.

Consequently, Applicant respectfully contends that the argument that McDowell and Suzuki I teach the combination of elements (i), (ii) and (iii) above is not based on the actual teachings of these references. The actual teachings of the references do not show how these references can be combined in a single working system.

The Examiner correctly stated that "one cannot show non-obviousness by attacking references individually where the rejections are based on combinations of references." However, Applicant's arguments do not rest on individual attacks of references, but of the assertion that the teachings of the references cannot be combined to form a single system that corresponds to the present claims. For example, the teachings cannot be combined to produce a system that provides for multiple frames including samples of different bit lengths for different frames while keeping the frames of the same size.

[1] Bits HB0-HB3 are not considered as they do not include compressed waveform data. However, even if these bits were

It is respectfully asserted that independent claims 1, 6, 9 and 10 are patentable in view of the cited art for the reasons discussed above. Dependent claims 2, 7, 8 and 33-37 are patentable because they depend from claims 1, 6, 9 and 10.

Applicant respectfully submits that, for the above discussed reasons, all pending claims are in condition for allowance.

If, for any reason, the Examiner finds the application other than in condition for allowance, Applicant requests that the Examiner contact the undersigned attorney at the Los Angeles telephone number (213) 892-5790 to discuss any steps necessary to place the application in condition for allowance.

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considered, the various frames would still be of different sizes.
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In the unlikely event that the transmittal letter is separated from this document and the Patent Office determines that an extension and/or other relief is required, Applicant's petition for any required relief including extensions of time and authorizes the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to **Deposit Account No. 03-1952** referencing Docket No. 393032041500.

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Respectfully submitted,

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